

Institutional Support

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Institutional Support



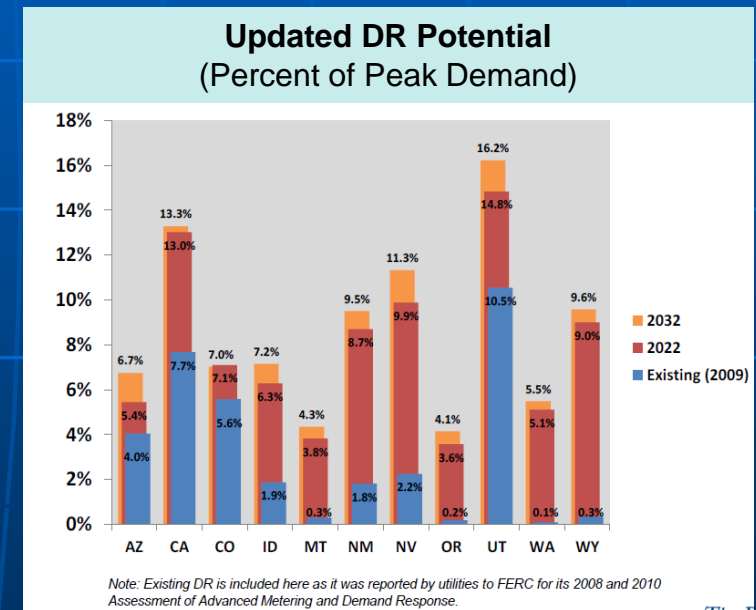
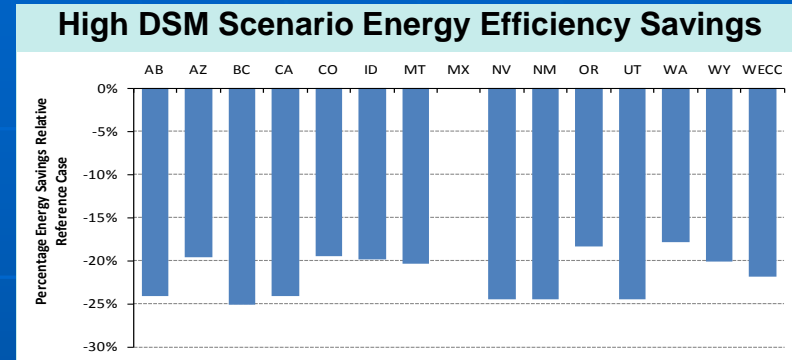
Multi-year Program Plan for Institutional Support focus area has **four** main activities.

- Provide Technical Assistance to States and Tribal Governments
- Support Regional Planning and Reliability Organizations
- Develop Methods and Resources for Assessing Grid Modernization: Emerging Technologies, Valuation, and Markets
- Conduct Research on Future Electric Utility Regulations

Each activity has specific goals and target achievements to be completed by 2020.

DER in Regional Electric System Planning

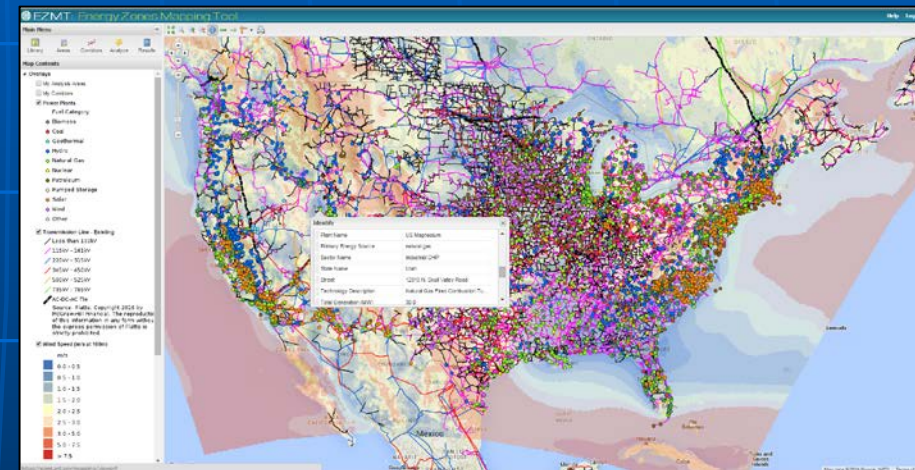
- Ongoing TA to WECC/WGA; modeling of energy efficiency, demand response, and distributed generation
- Analyzed (and adjusted) balancing authority load forecasts to ensure that WECC reference case accounts for current state DER policies
- Developed high EE load forecasts based on EE potential studies
- Updated DR potential estimates and developed DR dispatch algorithms for WECC production cost models
- Supported development of DG-PV scenario tool for WECC transmission planning



Energy Zones Mapping Tool (EZMT)



Home Page (<http://ezmt.anl.gov>)



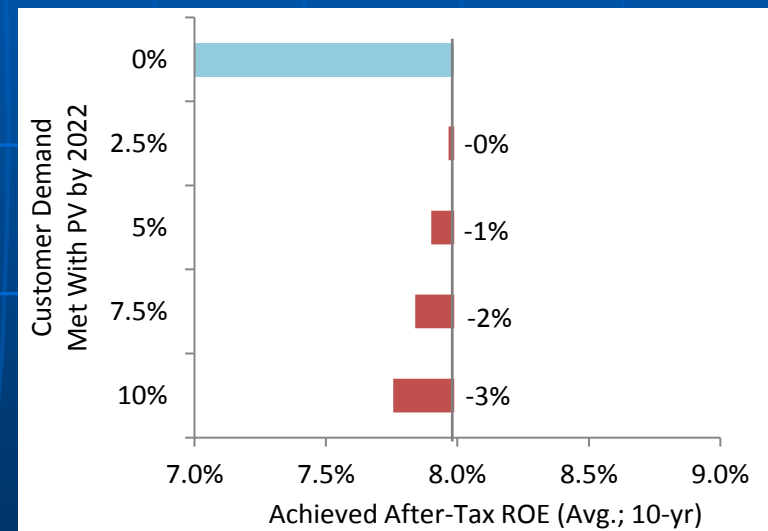
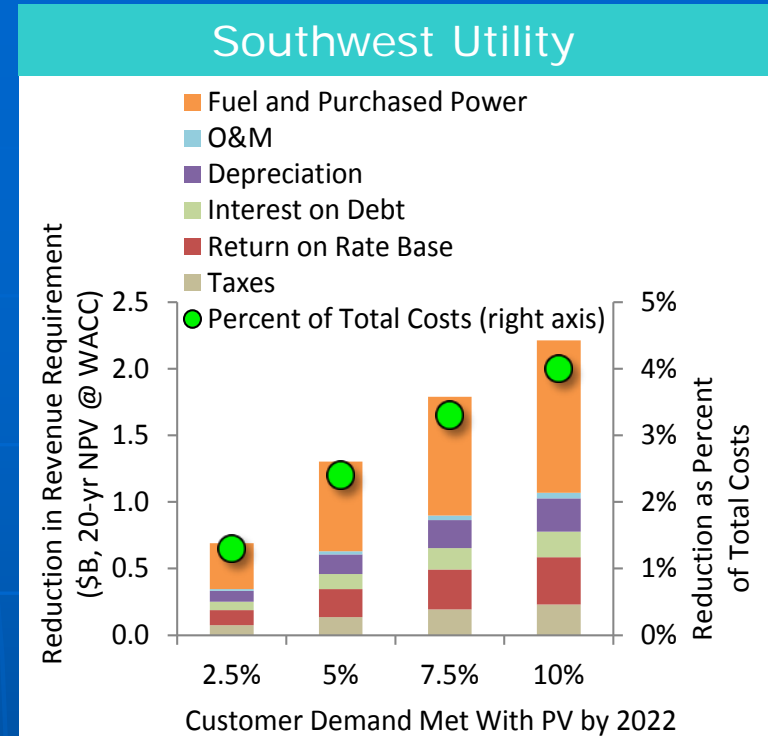
Energy Zones Mapping Tool, with wind speed, transmission lines, and power plants

- EZMT was originally developed for Eastern Interconnection (EISPC); now being extended to entire United States
- Broad energy resource scope (9 energy resources)
- Mapping library (270+ layers) focused on energy resources & infrastructure, siting factors
- Flexible energy technology suitability models (38 different technologies/70 siting factors)
- Flexible energy corridor analysis/route modeling tools
- Dynamic, geographically specific reports (20 topics)
- Searchable policy database (~2,400 policies, regulations, and incentives)

Future Electric Utility Regulation

UTILITY BUSINESS MODELS & REGULATION

- Developed FINDER model to quantify and assess financial implications of EE, DR, and DER on utility shareholders and ratepayers
- TA assistance to state PUCs and utilities (e.g., AZ, KS, MA, IL, and NV, two regional workshops)
- Case studies: Financial impacts of net-metered PV on prototypical investor-owned utility in southwest and northeast DISCO
- Results: impacts could be mitigated through various ratemaking and policy approaches



Future Electric Utility Regulation: Work Products

1. *Distributed Energy Resources (DERs), Industry Structure and Regulatory Responses.* Steve Corneli & Steve Kihm
2. *Distribution Systems in a High DER Future: Planning, Market Design, Operation and Oversight.* Paul De Martini & Lorenzo Kristov (CAISO)
3. *Performance-Based Regulation in a High DER Future.* Tim Woolf & Mark Lowry
4. *Distribution System Pricing for DERs.* Ryan Hledik & Jim Lazar (RAP)
5. *Future of Resource Planning.* E3 and LBNL
6. *Recovery of Utility Fixed Costs: Utility, Consumer, Environmental and Economist Perspectives.* LBNL, Lisa Wood, John Howat (NCLC), Ralph Cavanagh, Severin Borenstein (UC)



GMLC: Institutional Support Projects

- Foundational Analysis: Metrics
- Grid Services & Technologies Valuation Framework
- Distribution System Planning: Decision Support Tools
- Future Electric Utility Regulation

Regional Projects

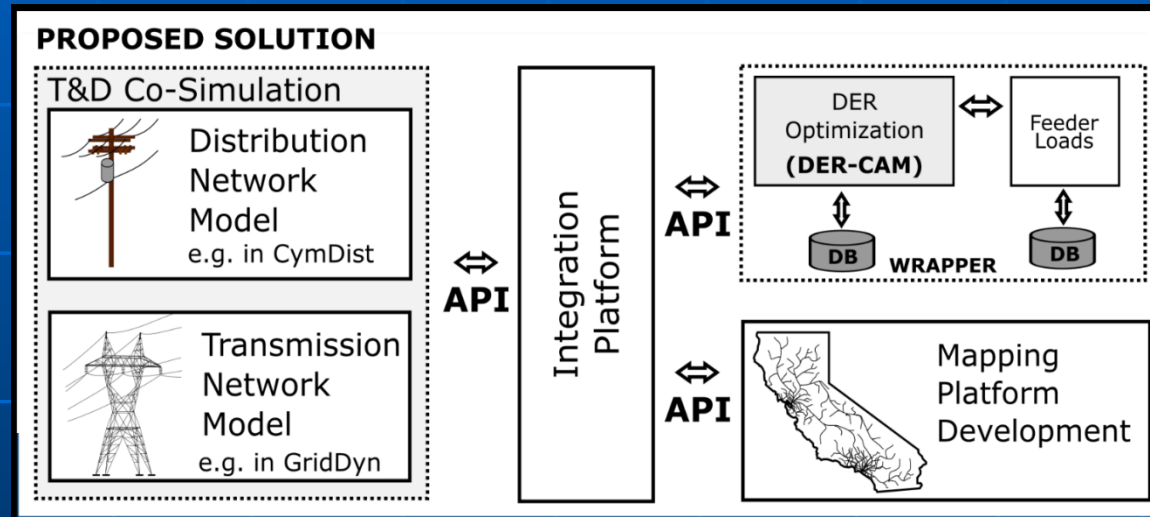
- New York: Technical Support to the Reforming Energy Vision (REV) Initiative
- California: DER Siting and Optimization Tool to enable large scale deployment of DER

California: DER Siting and Optimization

Tool to enable large scale deployment of DER

Goal: Deliver an online open-access integrated distributed resource planning and optimization platform, able to:

- Identify DER penetration patterns based on optimized investment assessments of behind-the-meter DER
- Consider optimal DER operational strategies in the process of identifying penetration patterns (e.g. PV, solar thermal, batteries, chp)
- Identify sites with high economic potential for microgrid and DER deployment
- Consider potential policy incentives and the value of DER as grid assets (e.g. ancillary services)
- Consider network constraints in the DER location problem
- Evaluate impacts of DER penetration on the bulk electric grid system and mitigate them



- Major breakthrough: Tool that offers T&D co-simulation with behind-the-meter DER optimization
- Direct support to CPUC to complement Distribution Resources Plans (DRP) and support the Integration of Demand-Side Resources (IDSR)
- Direct support to NY REV in collaboration with NYSERDA